FLIGHT AND COLONY FOUNDATION IN TWO CUBITERMES SPECIES (ISOPTERA: TERMITIDÆ)

by R. M. C. WILLIAMS B. Sc.
(Colonial Termite Research Unit, London.)

Introduction.

Cubitermes is probably the commonest and certainly the most evident genus of the Termitinae in Africa south of the Sahara. Nearly all members of this sub-family feed on soil, and of their biology and economic status comparatively little is known. The two species dealt with here have been identified by the author as Cubitermes ugandensis Fuller and Cubitermes testaceus Williams. A general study of these two species was made between February 1955 and January 1956, first at Kawanda Research Station, near Kampala, Uganda, and then from November 1955 at the East African Agriculture and Forestry Research Organisation, Kikuyu, Kenya Colony. A part of this period was given to the study of imagos, primarily of C. ugandensis but to a limited extent of C. testaceus also. This paper deals with the period between flight and the resumption of cryptobiotic life.

I wish to acknowledge the assistance given me by the Department of Agriculture, Uganda and by E. A. A. F. R. O. in providing laboratory space, and the extra facilities and advice given by Mr. A. P. G. Michelmore and other staff at Kawanda.

Material.

Both species avoid shaded conditions, being found typically in short open grassland and only in the clearings of woodland. They commonly occur together, occasionally even in the same mound. They have been taken in most parts of Uganda above an altitude of c. 1,050 m., excluding the drier north-eastern regions, in Kenya west of the Rift and in north-west Tanganyika. C. ugandensis has been taken also from Haut Uélé, Belgian Congo, and C. testaceus from Ruanda Urundi.

The material used for this work was taken entirely from swamp border areas near Kawanda Research Station. The countryside there consists of red soil hills and swampy valleys. The hills carry cultivation and tall elephant grass. The swamps carry Papyrus or dense swamp forest and are bordered by short grass pasture with scattered bushes and trees on dark brown soil. Mounds of the two species occur in large numbers on the short grass pasture (fig. 1), avoiding any parts subject to more than occasional inundation, and here and there on the hills wherever they are neither destroyed by cultivation nor shaded by elephant grass.

Methods.

All the work was done in the laboratory with the exception of a few field observations on flight. A total of about 350 alates of C. ugandensis and about 70 of C. testaceus were used.

Pieces of mound were used for the transport of alates to the laboratory. A piece, roughly cubical with sides of about 20 cms., would be taken from a part of the mound...
where alates were present. Further alates would be picked up by the tips of the wings, to prevent fluttering, and presented to openings in the mound piece which they would enter readily. The piece would be opened carefully in the laboratory and as many alates as needed at any one time extracted from it. Numerous workers were always present and if the piece was kept damp the alates would retain their health and vigour for many days, so far as could be judged, though the required number was always flown within 24 hours.

A chamber with hardboard walls and glass cover, interior dimensions approximately 30 x 30 x (height) 10 cms., was used for laboratory flights. Alates were flown in groups of 20 to 30. Artificial dealation was used in a few cases by the method described below in connection with wing shedding. Tandem pairs and others were allowed to run into glass tubes and were then transferred to, or allowed to enter, glass plates. These were of simple design, single chambered with a single cover glass and no special provision for damping, their interior dimensions being 8.75 x 5 x 0.25 cms. They were filled with topsoil of the locality from which the termites were taken, damped to just below saturation level before installation of the imagos. After installation the plates were kept flat in dark chambers. The table below summarises the degree of success of the methods as shown by alates selected at random and flown solely for colony foundation. Production of larvae is taken as the measure of success.

![Mounds of the two species in a swamp border area near Kawanda, with swamp forest in the background.](image)

<table>
<thead>
<tr>
<th>Species</th>
<th>Alates flown</th>
<th>Pairs obtained</th>
<th>Pairs successful</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. ugandensis</td>
<td>60-70</td>
<td>29</td>
<td>26</td>
</tr>
<tr>
<td>C. testaceus</td>
<td>30</td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>